c. Amendments to Claims

1. (Original) An apparatus, comprising:

an antenna having first and second electrodes; and

a quasi 1D dielectric material having a charge or spin density wave state, the electrodes located adjacent portions of the dielectric material.

2. (Original) The apparatus of claim 1, wherein the dielectric material is a quasi one-dimensional material whose anisotropy axis is oriented along a line going from one of the electrodes to the other of the electrodes.

3. (Original) The apparatus of claim 1,

wherein the antenna is a capacitor whose plates are the first and second electrodes; and

wherein the dielectric material is disposed between the electrodes.

4. (Original) The apparatus of claim 3, further comprising:

a variable voltage source coupled across the capacitor.

5. (Original) The apparatus of claim 1, wherein the dielectric material has a spin density wave state.

6. (Original) The apparatus of claim 5, wherein the dielectric material has a spin density wave state at room temperature.

7. (Original) The apparatus of claim 5, wherein a melting transition for the spin density state is a temperature of 293°K or higher.

8. (Original) The apparatus of claim 5, wherein the dielectric material includes one of a cuprate ladder material and a vanadite.

9. (Original) The apparatus of claim 8, wherein the dielectric material includes strontium.

10. (Original) The apparatus of claim 1, wherein the dielectric material is a doped anti-ferromagnetic material with a transition temperature that is at least as high as room temperature.

11. (Original) The apparatus of claim 5, further comprising:

an amplifier to connected to determine signal values from voltages between the electrodes and to detect transmission signals at wavelengths that are at least one hundred times longer than the distance between the first and second electrodes.

12. (Original) An apparatus, comprising:

a capacitor having first and second electrodes;

a quasi 1D dielectric material disposed between the electrodes, the dielectric material having a charge or spin density wave state.

13. (Original) The apparatus of claim 12, wherein the dielectric material acts as a quasi one-dimensional material and has an anisotropy axis oriented along a line from one of the electrodes to another of the electrodes.

14. (Original) The apparatus of claim 12, wherein the dielectric material has a spin density wave state.

15. (Original) The apparatus of claim 14, wherein the dielectric material has a spin density wave state at room temperature.

16. (Original) The apparatus of claim 14, wherein a melting transition for the spin density wave state has a temperature of 293°K or higher.

17. (Original) The apparatus of claim 14, wherein the dielectric material includes one of a cuprate ladder material and a vanadite.

18. (Original) The apparatus of claim 15, further comprising:

an integrated circuit, the capacitor being located in the integrated circuit.

19. (Original) The apparatus of claim 12, wherein the dielectric material is an anti-ferromagnetic material with a transition temperature that is at least as high as room temperature.

20. (Original) The apparatus of claim 12, further comprising:

a variable voltage source coupled across the capacitor.

21. (Previously added) The apparatus of claim 1, wherein the quasi 1D dielectric material comprises a cuprate.

22. (Previously added) The apparatus of claim 12, wherein the quasi 1D dielectric material comprises a cuprate.